

FOUR TREMATODES FROM THE BLACK SKIMMER,
RYNCHOPS NIGRA LINN., (AVES: RYNCHOPIDAE),
IN GASPARILLA SOUND, FLORIDA, INCLUD-
ING THE DESCRIPTION OF A NEW GENUS
AND TWO NEW SPECIES¹

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The trematodes reported here were collected from Black Skimmers in Little Gasparilla Pass, Gasparilla Sound, Florida.

Galactosomum spinetum (Braun, 1901) and *Stephanoprora denticulata* (Rudolphi, 1802) were also taken from these same birds. *S. denticulata* has apparently been reported from the West Coast of Florida only in the Herring Gull, *Larus argentatus* Linn. (Hutton & Sogandares, *in press*).

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Unless otherwise stated, all measurements are in millimeters.

NEOSTICTODORA HUTTONI, n. sp., n. gen.

Host: *Rynchops nigra* Linn.; skimmer; family Rynchopidae

Location: Intestine

Locality: Little Gasparilla Pass, Gasparilla Sound, Florida

Holotype: U. S. Nat. Mus. Helm. Coll. No. 39202

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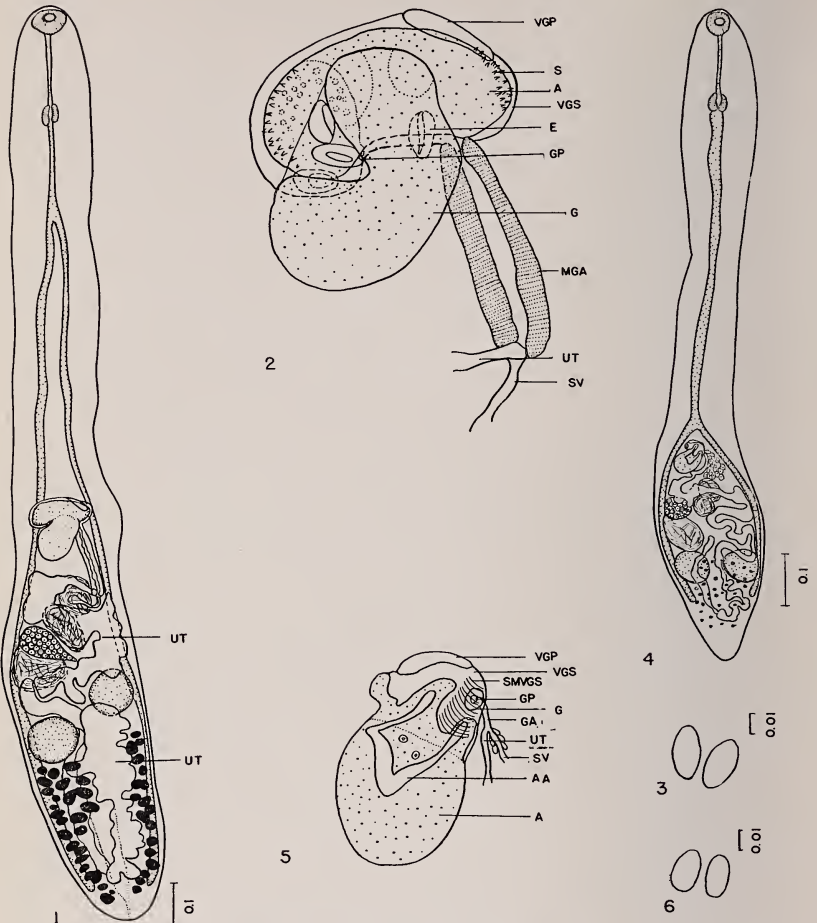
Diagnosis (based on 2 specimens): Body elongate and narrow, widest at postequatorial level, 1.580 to 1.700 long by 0.238 to 0.255 in maximum width. Cuticle spined to posterior end of body. "Eyespots" of diffuse granules present on each side of pharynx. Oral sucker subterminal, 0.048 to 0.052 long by 0.060 to 0.060 wide. Acetabulum (Fig. 2) median and postequatorial, about 0.100 to 0.104 wide; bilobed with about 100 coarse spines approximately 8 microns long on each lobe. Prepharynx 0.128 to 0.136 long, 2.65 to 3.40 times length of pharynx. Pharynx 0.040 to 0.048 long by 0.028 to 0.028 wide. Esophagus 0.188 to 0.196 long, about 3.92 to 4.90 times length of pharynx. Cecal bifurcation 0.420 to 0.424 from anterior end of body. Ceca 2, one on each side of body; ending blindly in posterior tip of body.

Ventrogenital pore postequatorial, intercecal; followed by ventrogenital sac enclosing acetabulum posterodorsally and medially, and about anterior $\frac{1}{2}$ of a ventral gonotyl which is about 0.128 to 0.136 long. Portion of gonotyl within ventrogenital sac seeming to fuse with anteromedian and ventral surface of unspined section of acetabulum; portion of gonotyl outside ventrogenital sac bulbular in shape. Testes 2, oblique, about in posterior $\frac{4}{5}$ body, intercecal; subspherical in shape, smooth in outline; sinistral testis foremost, 0.096 to 0.100 long by 0.080 to 0.080 wide; dextral testis posteriormost, 0.100 to 0.120 long by 0.096 to 0.100 wide. Posttesticular space 0.306 to 0.306 long. Seminal vesicle tripartid, the apposed muscular tip almost in contact with ovary; connecting with a muscular genital atrium about 0.084 to 0.108 long which lacks muscles previous to entering ventrogenital sac at base of right acetabular lobe. Prostate cells surrounding seminal vesicle or other genital ducts apparently lacking. Ovary dextral, intercecal, between testes and acetabulum, subtriangular to oval in shape, with smooth borders; 0.068 to 0.080 long by 0.080 to 0.100 wide. Seminal receptacle immediately posterior to ovary; with posterior border almost in line with foretestis. Vitellaria filling most of posttesticular space behind each testis. Uterus descending from ovary to fill posttesticular space, ascending between testes, filling space between ovary and testes and ovary and acetabulum, inserting into genital atrium together with seminal vesicle. Eggs 20 to 24 microns long by 12 microns wide. Excretory vesicle not clearly observed.

The name *huttoni* is in honor of my colleague, Dr. R. F. Hutton.

Discussion: *Neostictodora huttoni* differs from all other described species of *Stictodora*, and other genera of the Stictodorinae, by possessing a muscular genital atrium connecting the seminal vesicle and uterus with the ventrogenital sac. Other outstanding features are the bilobed and spined acetabulum which is seemingly fused with the gonotyl. The male and female ducts of *Stictodora* spp. usually open directly into the ventrogenital sac, or into a short non-muscular genital atrium. A fusion of the two genital ducts leading to the ventrogenital sac or extension of existing genital atrium with subsequent muscularization could produce a condition such as found in *Neostictodora*. Presently I prefer to regard the presence of a muscular genital atrium as a generic character in this group of trematodes. Thus I propose the genus *Neostictodora* which is like *Stictodora* Looss, 1899, but differs by possessing a muscular genital atrium connecting the seminal vesicle and uterus with the ventrogenital sac. Additional characters are the bilobed and spined acetabulum with a seemingly fused portion of gonotyl lying in the ventrogenital sac.

Professor Raymond Cable (personal communication) has made histological studies of the terminal genitalia of certain heterophyid trematodes. He has established a terminology which reflects the homology of the terminal genital ducts of heterophyids with that of other trematodes. His terminology is used in this paper and is as follows: The ventrogenital pore is the aperture of the ventral surface of the body which connects with the ventrogenital sac, a cavity that contains a portion of the acetabulum, gonotyl and genital pore. The acetabulum is a highly modified structure and is usually the postero-central spine-bearing muscular structure which partially intrudes into the ventrogenital sac. The gonotyl is usually on the left side of the ventrogenital sac, being in essence a muscular pad or muscular thickening of the wall of the ventrogenital sac. The genital pore is the aperture of the uterus and seminal vesicle into the ventrogenital sac. Since *Neostictodora* possesses an additional character, a highly muscular hermaphroditic duct connecting the seminal vesicle and uterus with the ventrogenital sac, Professor Cable suggests that the structure be called a genital atrium in order to maintain a homologous terminology with that used for other trematodes.



EXPLANATION OF FIGURES

Unless otherwise specified all drawings were made with the aid of a camera lucida. The projected scales are in millimeters. Abbreviations used: A, acetabulum; AA, acetabular armature; E, egg; G, gonotyl; GA, genital atrium; GP, genital pore; MGA, muscular hermaphroditic duct or genital atrium; S, spine; SMVGS, spiral musculature of ventrogenital sac wall; SV, seminal vesicle; UT, uterus; VGP, ventrogenital pore; VGS, ventrogenital sac.

- Fig. 1. *Neostictodora huttoni* (this paper), ventral view.
- Fig. 2. Same. Sketch of terminal genitalia, ventral view.
- Fig. 3. Same. Uterine eggs.
- Fig. 4. *Stictodora (Parastictodora) martini*. Ventral view.
- Fig. 5. Same. Sketch of terminal genitalia, ventral view.
- Fig. 6. Same. Uterine eggs.

STICTODORA (PARASTICTODORA) MARTINI, n. sp.

(Figs. 4 to 6)

Host: *Rynchops nigra* Linn.; skimmer; family Rynchopidae

Location: Intestine

Locality: Little Gasparilla Pass, Gasparilla Sound, Florida

Holotype: U. S. Nat. Mus. Helm. Coll. No. 39203

Diagnosis (based on 3 specimens, measurements on 2 favorable specimens): *Stictodora* (*Parastictodora*): Body elongate, narrow, widest at level of genital organs, 1.19 to 2.142 long by 0.187 to 0.204 in maximum width. Forebody 0.782 long. "Eyespots" of diffuse granules present on each side of pharynx. Cuticle spined to posterior end of body. Oral sucker subterminal, 0.044 to 0.048 long by 0.048 to 0.056 wide. Acetabulum median, and in posterior $\frac{1}{2}$ body, bulbular in shape, 0.080 to 0.084 long by 0.056 to 0.060 wide; containing a U-shaped sclerotized armature (sinistral, dextral and basal portions of armature measure about 44 to 48, 40 to 44 and 36 microns respectively) embedded in its matrix; tips of armature anterior and covered with muscular tissue; also containing giant cells such as described for *Parastictodora hancocki* Martin, 1950. Prepharynx from 0.096 to 0.104, about 3 times length of pharynx. Pharynx 0.032 to 0.040 long by 0.028 to 0.032 wide. Esophagus 0.493 to 0.595 long, about 12 to 18 times length of pharynx. Cecal bifurcation about 0.784 to 0.782 from anterior end of body. Ceca 2, extending one on each side of body to end blindly about $\frac{2}{3}$ distance from acetabulum to posterior end of body, a short distance behind testes.

Ventrogenital pore median, immediately behind cecal bifurcation, followed by a ventrogenital sac posteromedially enclosing anterior portion of acetabulum which contains tips of U-shaped armature; and a gonotyl on sinistral side of ventrogenital sac wall. Spiral muscular fibers which appear as parallel striations on dextroventral wall of ventrogenital sac, extending from anterior border of gonotyl to level of acetabular insertion into the ventrogenital sac, probably representing a muscular thickening of the ventrogenital sac wall. A thickening on sinistral side of ventrogenital sac appears to fuse with acetabulum and may represent a vestige containing a rudimentary third sclerotized prong of the acetabular

armature. Testes 2, side by side, behind middistance from cecal bifurcation to posterior end of body, intercecal, roundish in shape and smooth in outline; dextral testis (measurable in a single specimen) 0.060 long by 0.056 wide; sinistral testis (measurable in a single specimen) 0.068 long by 0.056 wide. Posttesticular space 0.102 to 0.153 long. Seminal vesicle bipartid, median between acetabulum and testes, opening into a short non-muscular genital atrium which appears to penetrate gonotyl, opening into ventrogenital sac through genital pore. Prostate cells surrounding portion of seminal vesicle proximal to ventrogenital sac. Ovary dextral, intercecal, between acetabulum and dextral testis; roundish in shape and smooth in outline; 0.048 to 0.068 long by 0.044 to 0.064 wide. Seminal receptacle immediately postovarian, in contact with ovary and dextral testis. Vitellaria mainly intercecal in posttesticular space, at least overlapping posterior $\frac{1}{2}$ testes. Uterus descending from ovary to a point about midway between testes and posterior end of body, ascending intertesticularly, occupying space between ovary, testes and acetabulum to enter genital atrium on left side of seminal vesicle. Uncollapsed uterine eggs 20 to 24 microns long by 12 microns wide. Excretory vesicle not observed.

The name *martini* is in honor of Professor W. E. Martin, University of Southern California, in recognition of his life-history studies of the heterophyids.

Discussion: There is one other species in the sub-genus *Parastictodora* Martin, 1950. This species, *S. (P.) hancocki* (Martin, 1950), was obtained experimentally in chickens. *S. (P.) martini* differs from *S. (P.) hancocki* as follows: Spiral muscular fibers present in ventral left wall of ventrogenital sac, ceca ending a short distance posterior to testes, cecal bifurcation almost in posterior $\frac{2}{3}$ body, seminal receptacle posterior to ovary and eggs 20 to 24 microns long by 12 microns wide, as compared with ventrogenital sac without spiral muscular fibers, ceca extending to posterior end of body, cecal bifurcation almost equatorial and eggs 25 to 28 microns long by 13 to 16 microns wide. Yamaguti (1958), though not Morozov (1953), would relegate *Parastictodora* to sub-generic rank in the genus *Stictodora*. I am not in complete agreement with Yamaguti (1958). My specimens of *P. martini* were instantly recognizable as belonging to the sub-genus *Parastictodora* on the basis of possessing an unspined acetabulum with a sclerotized U-shaped

armature and a very long esophagus. These characters make *S. (P.) hancocki* and *S. (P.) martini* very distinctive. Another view is that the rudimentary portion of the acetabulum on the dextral side of the ventrogenital sac of *S. (P.) martini* may contain a vestigial third prong of the sclerotized armature of the acetabulum. Due to insufficient material, I have not sectioned specimens to ascertain this point. If a reduction of size of the third acetabular prong occurs in my material, it would represent an intermediate condition between species of *Stictodora* and *Parastictodora hancocki* Martin, 1950. In this case, the only remaining character to separate *Stictodora* from *Parastictodora* would seem to be the length of the esophagus. This latter character could hardly be considered generic in value. Pending new collections and a study of additional material, Yamaguti's (1958) views concerning *Parastictodora* shall be retained with the above cited qualifications. Martin (1950) and Martin and Kuntz (1955) have studied the life histories of a species each of *Parastictodora* and *Stictodora*, respectively, and have found the cercariae to be very similar.

SUMMARY

Neostictodora huttoni (this paper), *Stictodora (Parastictodora) martini* (this paper), *Galactosomum spinetum* (Braun, 1901) and *Stephanoprora denticulata* (Rudolphi, 1802) are reported from the Black Skimmer, *Rynchops nigra* Linn. (Aves: Rynchopidae), for the first time in the west coast of Florida. A new genus, *Neostictodora* is proposed. *Neostictodora* is like *Stictodora* but differs by possessing a muscular genital atrium connecting the uterus and seminal vesicle with the ventrogenital sac. In addition, the acetabulum within the ventrogenital sac is bilobed and spined and the gonotyl is ventral and appears to be fused with the acetabulum.

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